

Title (en)  
POSITIVE ELECTRODE ACTIVE MATERIAL AND PREPARATION METHOD THEREFOR, SODIUM-ION BATTERY, AND DEVICE COMPRISING SODIUM-ION BATTERY

Title (de)  
POSITIVELEKTRODENAKTIVMATERIAL UND HERSTELLUNGSVERFAHREN DAFÜR, NATRIUM-IONEN-BATTERIE UND VORRICHTUNG MIT NATRIUM-IONEN-BATTERIE

Title (fr)  
MATÉRIAU ACTIF D'ÉLECTRODE POSITIVE ET SON PROCÉDÉ DE PRÉPARATION, BATTERIE AU SODIUM-ION ET DISPOSITIF COMPRENANT UNE BATTERIE AU SODIUM-ION

Publication  
**EP 3907793 A4 20220316 (EN)**

Application  
**EP 20738916 A 20200102**

Priority  
• CN 201910026508 A 20190111  
• CN 2020070137 W 20200102

Abstract (en)  
[origin: EP3907793A1] The present application discloses a positive electrode active material and its preparation method, a sodium ion battery and an apparatus containing the sodium ion battery. The positive electrode active material satisfies a chemical formula of  $\text{Na}_{1-x}\text{Cu}_h\text{Fe}_k\text{Mn}_l\text{M}_m\text{O}_{2-y}$  wherein M is one or more selected from Li, Be, B, Mg, Al, K, Ca, Ti, Co, Ni, Zn, Ga, Sr, Y, Nb, Mo, In, Sn, and Ba,  $0 < x \leq 0.33$ ,  $0 < h \leq 0.24$ ,  $0 \leq k \leq 0.32$ ,  $0 < l \leq 0.68$ ,  $0 \leq m < 0.1$ ,  $h+k+l+m = 1$ ,  $0 \leq y < 0.2$ , and the positive electrode active material has a water content of 6000 ppm or less.

IPC 8 full level  
**H01M 4/485** (2010.01); **C01G 45/12** (2006.01); **C01G 49/00** (2006.01); **H01M 4/131** (2010.01); **H01M 4/505** (2010.01); **H01M 4/525** (2010.01); **H01M 4/62** (2006.01); **H01M 10/054** (2010.01)

CPC (source: CN EP US)  
**C01G 45/1221** (2013.01 - EP); **C01G 49/0027** (2013.01 - EP); **C01G 49/0072** (2013.01 - EP); **H01M 4/131** (2013.01 - CN EP); **H01M 4/485** (2013.01 - EP); **H01M 4/505** (2013.01 - CN EP US); **H01M 4/525** (2013.01 - CN US); **H01M 4/628** (2013.01 - CN); **H01M 10/054** (2013.01 - CN EP US); **C01P 2004/61** (2013.01 - EP); **C01P 2004/62** (2013.01 - EP); **C01P 2006/12** (2013.01 - EP); **C01P 2006/82** (2013.01 - EP); **H01M 2004/021** (2013.01 - CN US); **H01M 2004/028** (2013.01 - CN EP US); **Y02E 60/10** (2013.01 - EP)

Citation (search report)  
• [X] EP 3048659 A1 20160727 - INST OF PHYSICS THE CHINESE ACADEMY OF SCIENCES [CN]  
• [X] CN 108963233 A 20181207 - INST PROCESS ENG CAS  
• [XI] CN 104617288 A 20150513 - CHINESE ACAD PHYSICS INST  
• [XI] LINQIN MU ET AL: "Prototype Sodium-Ion Batteries Using an Air-Stable and Co/Ni-Free O3-Layered Metal Oxide Cathode", ADVANCED MATERIALS, vol. 27, no. 43, 5 October 2015 (2015-10-05), DE, pages 6928 - 6933, XP055268591, ISSN: 0935-9648, DOI: 10.1002/adma.201502449 & MU LINQIN ET AL: "Prototype Sodium-Ion Batteries Using an Air-Stable and Co/Ni-Free O3-Layered Metal Oxide Cathode-Supporting Information", ADVANCED MATERIALS, vol. 27, no. 43, 5 October 2015 (2015-10-05), DE, pages 6928 - 6933, XP055886719, ISSN: 0935-9648, DOI: 10.1002/adma.201502449  
• See also references of WO 2020143533A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3907793 A1 20211110**; **EP 3907793 A4 20220316**; **EP 3907793 B1 20240103**; **EP 3907793 C0 20240103**; CN 111435741 A 20200721; CN 115472818 A 20221213; CN 115472819 A 20221213; CN 115498177 A 20221220; US 2021336262 A1 20211028; WO 2020143533 A1 20200716

DOCDB simple family (application)  
**EP 20738916 A 20200102**; CN 201910026508 A 20190111; CN 2020070137 W 20200102; CN 202211178750 A 20190111; CN 202211178783 A 20190111; CN 202211178882 A 20190111; US 202117371207 A 20210709